RPD | Revista Produção e Desenvolvimento
Research in Production and Development
eISSN: 2446-9580
Doi: https://doi.org/10.32358/rpd.2025.v11.e724

DETERMINANTS OF VOLUNTARY ADOPTION OF SASB STANDARDS TO DISCLOSE SUSTAINABILITY ISSUES: AN INTERNATIONAL PERSPECTIVE

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Submitted: 24/06/2024. Accepted: 10/12/2025
Published: 28/03/3025

ABSTRACT
Purpose: The purpose of this research is to investigate the impact of company- and country-specific variables on voluntary adoption of the Sustainability Accounting Standards Board (SASB) Standards in organisations that publish Integrated Reports (IR) and simultaneously use GRI standards to disclose ESG practices.

Methodology/Approach: It is based on an international sample of 8,247 firm-year observations between 2019 and 2021, where 6,856 used GRI standards and the remaining 1,391 used both SASB (Sustainability Accounting Standards Board) and GRI (Global Reporting Initiative) standards.

Findings: The findings indicate that business characteristics such as large size, profitability, leverage, ESG score, board size, independent directors, and specific abilities are relevant determinants. Firms who conformed to the IR and use GRI are more likely to simultaneously adopt SASB Standards voluntarily if they are located in nations with a higher GDP (Gross Domestic Product) per capita. Furthermore, the findings show that larger market-to-book ratios, gender diversity on the board, and the number of non-executive members on the board had low effect on the adoption of SASB Standards by firms that have already adhered to the IR.

Research implication: Firms can compare themselves with their peers to analyse factors that increase the likelihood of applying voluntary SASB standards at the same time as integrated reporting is being prepared.

Originality: To boost the use of SASB standards in Europe, as USA did, promoting the work of International Sustainability Standards Board (ISSB)

KEYWORD: GRI, ISSB, Integrated reporting, firm-specific, country-specific.

Objetivo: O objetivo desta investigação é investigar o impacto de variáveis específicas da empresa e do país na adoção voluntária das normas do Sustainability Accounting Standards Board (SASB) em organizações que publicam Relatórios Integrados (RI) e utilizam simultaneamente as normas GRI para divulgar práticas ESG.

Metodologia/abordagem: Baseia-se numa amostra internacional de 8.247 observações de anos de empresa entre 2019 e 2021, em que 6.856 utilizaram as normas GRI e os restantes 1.391 utilizaram tanto as normas SASB como as normas GRI.

Conclusões: Os resultados indicam que as caraterísticas empresariais, como a grande dimensão, a rentabilidade, a alavancagem, a pontuação ESG, a dimensão do conselho de administração, os diretores independentes e as capacidades específicas são determinantes relevantes. As empresas que estão em conformidade com o RI e utilizam o GRI têm maior probabilidade de adotar simultaneamente as normas SASB de forma voluntária se estiverem localizadas em países com um PIB (Produto Interno Bruto) per capita mais elevado. Além disso, os resultados mostram que rácios mais elevados entre o mercado e o balanço, a diversidade de géneros no conselho de administração e o número de membros não executivos no conselho de administração tiveram um efeito reduzido na adoção das normas SASB pelas empresas que já aderiram ao RI.

Implicações para a investigação: As empresas podem comparar-se com os seus pares para analisar os factores que aumentam a probabilidade de aplicar as normas voluntárias do SASB ao mesmo tempo que o relato integrado está a ser preparado.

Originalidade: Para impulsionar a utilização das normas SASB na Europa, à semelhança do que fizeram os EUA, promover o trabalho do International Sustainability Standards Board (ISSB)

1. INTRODUCTION

It is commonly accepted that the typical financial report no longer offers all the information stakeholders want. The lack of sufficient information has caused scholars and practitioners to question its effectiveness (Lev & Gu, 2016). This tendency has also led investors (Larry Fink, 2018) and stakeholders to call for rapid adoption of new disclosure and information methods that take into account sustainable and long-term development, inclusive capitalism, and transparency. Many companies provide sustainability reports, although they are usually standalone. In other words, a standalone text still looks to divide value generation into "financial" and "non-financial" causes. Stakeholders are misled by this distinction since it does not assure information consistency (Mervelskemper & Streit, 2017).

CSR (Corporate Social Responsibility) reporting has become routine for companies worldwide since the 1990s (KPMG, 2017). Many guidelines and standards have been developed to reveal NFI (non-financial information), including Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB) industry standards. These guidelines often use Sustainability Performance Indicators (SPIs). The independent, international GRI helps corporations and other organisations take responsibility for their impacts by creating a global vocabulary for disclosing them. GRI Standards are the world's most popular sustainability reporting standards (GRI, 2017; KPMG, 2024). The SASB Standards guide corporations' investor disclosure of material financial sustainability information. For each of 77 industries, the Standards highlight the environmental, social, and governance challenges most significantly to financial performance.

The SASB and the International Integrated Reporting Council (IIRC) announced their plan to merge into the Value Reporting Foundation (VFR) in November 2020 to enable firms and investors to create a common vocabulary on sustainability's financial implications. VFR was founded in June 2021. The Value Reporting Foundation (SASB Standards Foundation) merged into the IFRS Foundation, which became the first International Sustainability Standards Board (ISSB), on August 1, 2022. The ISSB oversees SASB Standards. ISSB will build on SASB Standards and use SASB's industry-based standards development strategy. Until the SASB Standards become the IFRS Sustainability Disclosure Standards, the ISSB encourages preparers and investors to fully embrace and apply them. By combining two business-value-focused businesses, the merger advanced simplification. The Value Reporting Foundation's Integrated Thinking Principles, Integrated Reporting Framework, and SASB Standards enable firms and investors to comprehend enterprise value.

The International Integrated Reporting Framework and Integrated Thinking Principles promote value creation, preservation, and erosion communication in 75 nations. Integrated reporting and thinking enable effective and productive capital allocation, promoting financial stability and sustainable development.

Integrated reporting aims to improve the quality of information available to financial capital providers to enable a more efficient and productive allocation of capital and promote a more cohesive and efficient corporate reporting approach that draws on different reporting strands and communicates the full range of factors that materially affect an organization's ability to create value over time. To promote accountability and stewardship for the broad base of capitals (financial, manufactured, intellectual, human, social and relationship, and natural), understand their independencies, and support integrated thinking, decision-making, and actions that create value over the short, medium, and long term. The Integrated Reporting Framework and Integrated Thinking Principles are maintained by the IFRS Foundation, a global not-for-profit, public interest organisation that develops high-quality, intelligible, enforceable, and universally accepted accounting and sustainability disclosure standards. This Framework links financial accounts and sustainability disclosures, and it is managed by the IFRS Foundation's IASB and ISSB (Integrated Reporting, 2022). SPIs improved company economic, social, and environmental communication (Schaltegger & Burritt 2000; Tarquinio et al. 2018). They support firm performance, decision-making, and social-

environmental commitments (Adams & Frost 2008; Gaudencio et al. 2018). Synthetic indicators help explain corporate management complexity and operationalize sustainable development (Wilburn and Wilburn 2013). SPIs translate qualitative data into quantitative data, making it easy to compare organisations of any type, sector, or country (Olsthoorn et al. 2001; Daub 2007). SPIs are one of the best approaches to synthesise, arrange, and compare relevant firms' NFI to stakeholders (Adams & Frost, 2008; Daub, 2007; Fernandez-Feijoo et al. 2014; Lin et al. 2014; Boiral et al. 2019).

Therefore, this study uses a worldwide sample of 8247 firm-year observations between 2019 and 2021, of which 6856 adopted GRI standards and 1391 adopted SASB standards, to analyse the voluntary adoption of integrated reporting and SASB standards. Thus, it will examine the impact of firm-specific and country-specific variables, answering earlier calls for this combination (Girella et al., 2019; Jensen & Berg, 2012).

Results suggest that business size, profitability, leverage, ESG score, board size, independent directors, and specific talents are key determinants. Companies who followed IR (Integrated Reporting) are more likely to implement SASB Standards if they are in nations with higher GDP per capita. The data also shows that enterprises who have already adopted the IR do not implement SASB Standards based on market-to-book ratio, gender diversity, or non-executive directors.

The study first extends and supplements earlier research in this area to provide an academic contribution. This research addresses past calls for a combination of firm and institutional characteristics in IR and SASB literature (Frias-Aceituno et al., 2014; Girella et al., 2019; Jensen & Berg, 2012). Second, it provides practical insights to companies considering various reporting methods. This study can help companies implement Integrated Reporting and SASB Standards.

2. LITERATURE REVIEW

a) Background on GRI and the use of SASB

Independent, multinational Global Reporting Initiative helps corporations and other organisations accept responsibility for their impacts by providing a global language for disclosure. GRI Standards dominate sustainability reporting worldwide. The GRI (2017) and influential stakeholder capitalism backers like the WEF (2022) encourage IR reporting. It provides a worldwide standard language for reporting impacts, enabling informed discourse and decision-making to enable companies to be honest and accept responsibility for their impacts for a sustainable future (GRI, 2022). More companies than ever use GRI's "first and main" global standards (GRI, 2022).

The International Integrated Reporting Framework and Integrated Thinking Principles are utilised in 75 nations to communicate about value generation, preservation, and erosion (IR, 2022), and enable effective and productive capital allocation, promoting financial stability and sustainable development (IR, 2022). To improve accountability and stewardship for the broad base of capitals (financial, manufactured, intellectual, human, social and relationship, and natural), promote understanding of their independencies, and support integrated thinking, decision-making (IR, 2022). IIRC oversaw these topics until 2021, when IFRS Foundation took over. A global not-for-profit, public interest organisation, the IFRS Foundation develops high-quality, intelligible, enforceable, and widely accepted accounting standards and, more recently, sustainability disclosure requirements. The Integrated Reporting Framework links financial accounts and sustainability disclosures. IASB and ISSB of the IFRS Foundation jointly manage the Integrated Reporting Framework (Integrated Reporting, 2022).

After the IIRC was founded in 2011, IR was promoted and utilised more widely. The IIRC promoted IR and best practices. The IIRC has been accused of being ‘captured' by investor interests (Deegan, 2020; Flower, 2020), which may limit IR's reporting innovation appeal. Recent occurrences support this accusation. In 2020, IIRC and SASB merged. The 2011-founded SASB supports guidelines to “guide the disclosure of financially important sustainability information by corporations to their investors” (SASB, 2021). The newly amalgamated organisation, VRF, intends to deliver

sophisticated corporate and investor decision-making tools (VRF, 2021). One year later, the IFRS Foundation announced the creation of the ISSB, which would include the VRF and the Climate Disclosure Standards Board (CDSB). The ISSB seeks to develop a comprehensive worldwide baseline of high-quality sustainability disclosure standards to suit investors' information needs. The proposed standards build on TCFD recommendations and include SASB Standards-based industry-based disclosure obligations. In apparent support of IR, the European Financial Reporting Advisory Group (EFRAG) has been reporting to the EU on sustainability guidelines for EU countries, arguing that "all dimensions of corporate reporting need to be interrelated under an integrated approach" (IFRS, 2022).

b) Theories used in GRI research

The use of GRI and SASB Standards is mostly voluntary. Thus, this manuscript is in the literature on voluntary disclosure, which exceeds and complements legal, regulatory, and other disclosure (Meek, Roberts, & Gray, 1995). Six theories explain why companies voluntarily adopt GRI and SASB Standards, based on other choices made by companies: agency theory (Chow & Wong-Boren, 1987; Cooke, 1991, 1992; Hossain, Perera, & Rahman, 1995; Watson, Shrives, & Marston, 2002), signaling theory (Campbell, Shrives, & Bohmbach-Saager, 2001; Ross, 1977; Watson et al., 2002; Whiting & Miller, 2008), and political cost theory (Huang & Kung, 2010; Whiting & Miller, 2008). Integrated reporting relates strategy to performance and addresses shareholders and stakeholders, unlike financial or corporate social responsibility reporting, hence it was chosen to focus on all these theories.

Additionally, theories are chosen depending on their overlap with other theories, such as validity. Watson et al. (2002) noted that signaling theory can contribute signaling legitimacy (and the corresponding variable) to legitimacy theory, therefore adding it to the model would not add value. Analyzing these theories in general and in relation to GRI Standards implementation studies gives us suggestions and inputs to select as many acceptable variables as feasible for the research.

According to agency theory (Jensen & Meckling, 1976), shareholders (principals) hire management (agents) to deliver services on their behalf, transferring decision-making authority. (p. 308). This contract assumes that the ownership and control of the firm may have distinct interests, leading to agency costs (Berle & Means, 1932). Managers who know shareholders would want to control their operations may be inclined to voluntarily release information to demonstrate their (excellent) performance. This should reduce information asymmetry, investor uncertainty, and capital cost. Garcia-Sanchez and Noguera-Gámez (2017) revealed that GRI Standards can reduce agency expenses in a broad sample of international listed businesses.

Signaling theory (Spence, 1978) is based on firm-shareholder knowledge asymmetry like agency theory (as pointed out by Morris, 1987, signaling and agency theories are consistent, even though a necessary condition of the former is information asymmetry, while the latter only implicitly refers to it). Thus, GRI and SASB Standards may help companies stand out by indicating their better quality (Eccles, 2001). Signals to the market improve finance costs and business value (Baiman & Verrecchia, 1996; Frankel, Johnson, & Skinner, 1999). Due to their consistency, agency and signaling theories have also been offered (Morris, 1987) and proved to be complimentary to voluntary disclosure research (Watson et al., 2002).

Political cost theory (Watts & Zimmerman, 1978) states that enterprises in highly regulated countries reveal voluntary information to avoid taxes and levies and government and constituency advantages. They may be criticised for not disclosing information (Lemon & Cahan, 1997). Thus, political visibility affects firm disclosure policies. Political cost theory is often misapplied and not understood as Watts and Zimmerman intended (Milne, 2002). In this study, we adopted political cost theory analysis to each country's GDP per capita to determine if increasing GDP per capita affects GRI and SASB.

According to the proprietary cost theory, costs associated with information preparation and disclosure may affect organisations' willingness to disclose volunteer information. If enterprises do not have to pay significant disclosure costs, they may be more likely to reveal precise information about their performance, reducing information asymmetry and capital costs Grossman (1981) and Milgrom (1981). Disincentives can be portrayed by rivals using sensible information (Elliott & Jacobson, 1994).

Institutional theory views organisations as subject to complex political, cultural, and economic influences (Granovetter, 2000; Jackson & Apostolakou, 2010; Matten & Moon, 2008). Within this system, organisations follow its rules and standards (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Institutional isomorphism emerges from imitational or independent behaviour conformity. Institutional theory can explain why organisations in the same industry use information strategies other than financial ones. Jensen and Berg used institutional theory for integrated information (2012). This idea can explain sustainable reporting versus integrated reporting, they say. Companies in countries with more investor protection, education spending, and corporate social responsibility are more likely to report in an integrated way. In line with institutional theory and country factors, Frías-Aceituno et al. (2013a) found that enterprises in closely regulated and civil law nations are more likely to produce integrated reports.

Finally, stakeholder theory is most typically used to study voluntary disclosure factors. First, proposed by Freeman (1984), it assumes enterprises and stakeholders sign an implicit social contract. This increases stakeholders' pressure on corporations to share information. Some authors argue that stakeholder theory is still misunderstood (Phillips, Freeman, & Wicks, 2003; Wagner Mainardes, Alves, & Raposo, 2011).

According to García-Sánchez et al. (2013), companies in collectivist and feminist countries are more likely to disclose information in an integrated style, but power distance, long-term orientation, and uncertainty/risk were not found as drivers. Size and profitability were positive and significant control variables. Management might affect the decision to provide an integrated report since it has a stakeholder responsibility and wishes to decrease information asymmetries, according to Frias-Aceituno et al. (2013b). They only identified a substantial impact of board size and diversity, specifically women on the board, on integrated reporting. Stubbs and Higgins (2018) revealed that Australian stakeholders prefer voluntary integrated reporting over required.

Independent of the above ideas, numerous research has shown that integrated reporting adopters had higher Bloomberg environmental and social disclosure scores than non-adopters. No correlation exists between size, profitability, leverage, industry, and voluntary IR adoption (Lai, Melloni, & Stacchezzini, 2016).

3. MATERIAL AND METHODS

a) Hypotheses development

Previous research on firm and country factors of voluntary integrated reporting adoption found that firm and country variables affect international voluntary adoption. However, the voluntary adoption of SASB standards, particularly by those companies that are engaging in the preparation of IR, and used GRI standards to report sustainability issues, is under investigation. This research contributes to that gap, by examining the determinants of voluntary adoption of SASB Standards by GR I- compliant enterprises.

Firm size. Firm size is often utilised in voluntary disclosure research. According to agency theory, larger firms are more inclined to use external money. To maintain or lower "normal" agency costs, it will be incentivized to release information voluntarily. Public awareness makes it easier for larger enterprises to convey their greater quality. Visibility could harm them. They may be more vulnerable to government and institutional pressure and unwilling to reveal due to political costs

(Wallace, Naser, & Mora, 1994). Similar to the signalling theory, the stakeholder theory states that larger companies have more stakeholders to satisfy. The publication of a lot of comprehensive information through voluntary reporting formats can help achieve this. Larger organisations may have more funds to produce and distribute new information practises, therefore they may be less affected by ownership costs. Given these considerations, most research have found that business size increases voluntary disclosure, but there are still some key concerns, particularly because firm size can be used as a proxy for numerous influences (Ball & Foster, 1982; Watts & Zimmerman, 1978). Frias-Aceituno et al. (2014) suggested that larger enterprises have more competitive attributes such diversified product lines and complicated distribution networks and require more capital market intensity for financing. Size positively correlated with GRI adoption. Multiple investigations, including Frías-Aceituno et al. (2013a, 2013b), García-Sánchez, and Noguera-Gámez, confirm this result (2017). Size did not affect GRI disclosure, according to Lai et al. (2016). Main findings of prior studies informed the study hypothesis:

H1. Firm size has a positive association with voluntary adoption of SASB Standards by firms that adhered to GRI Standards.

Profitability. Profitability is a popular optional disclosure variable. Like corporate size, profitability increases the likelihood of non-mandatory disclosure. This will limit, if not reduce, the agency costs the organisation incurs from external funding. A more lucrative corporation may want to convey its superior performance to stakeholders, which may relate to signalling theory. Due to financial prosperity, ownership costs may be easier to absorb. However, institutions and stakeholders may scrutinise the sources of profitability and press for more extensive disclosure. GRI-profitability studies have yielded conflicting results. The profitability-GRI link was not significant for Lai et al. (2016). However, Frias-Aceituno et al. (2014) observed that profitability affects GRI adoption since enterprises with better profitability are more likely to reveal more information to decrease adverse attractiveness. We propose the following hypothesis:

H2. Firm profitability has a positive association with voluntary adoption of SASB Standards by firms that adhere to GRI Standards.

Leverage. A company's voluntary disclosure is usually determined by leverage. It shows how much financial capital organisations have received. Thus, debtors (Eng & Mak, 2003) and a wide range of stakeholders who want to know if the company can create value in the medium and long term pay more attention to them. According to agency theory and stakeholder theory, managers would reveal more data (financial and non-financial) and better data (Barnea & Rubin, 2010) to lessen information asymmetry. Due to their high expenses, corporations with more power may be reluctant to employ new information devices like GRI and SASB to communicate with debtors and stakeholders. GRI and SASB reporting may help a corporation develop this issue. No significant link was found by Lai et al. (2016). The primary findings of past study suggest the following hypothesis:

H3. Leverage has a positive association with voluntary adoption of SASB Standards by firms that adhered to GRI Standards.

Market-to-book ratio. According to agency theory, firms with a greater market-to-book ratio have higher external fund costs due to investor-manager information asymmetry, which encourages voluntary disclosure. However, the risk of informing competitors about useful knowledge may discourage enterprises from doing so. The expenses may outweigh the benefits. Although most studies that have examined the elements that may influence the adoption of this reporting format have not included it (and the few that have perceived it as growth opportunity), they may be relevant. Companies will offer more information and KPIs if they value their intangible resources (KPIs). This signal could be appreciated by many stakeholders and constituents and aimed for their benefit.

According to GRI and SASB criteria, prior studies (Frias-Aceituno et al., 2014; García-Sánchez et al., 2013) did not discover a significant link with this variable as a key determinant or control variable. Both researches sampled from the Forbes Global 2000 list, which does not provide integrated reporting, which may explain these outcomes. This hypothesis was made:

H4. Market-to-book ratio has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to GRI Standards.

ESG Score. A materiality evaluation can assist a business identify stakeholders' top ESG issues. The ESG score measures a company's long-term environmental, social, and governance risks, which typical financial analysis overlooks. ESG scores allow investors to assess a company's intentions from how they treat their employees to how board decisions are made or whether environmental issues are being prioritized. A high ESG score can persuade investors to invest in a company either because the company's values align with their own, or because the company is sufficiently protected from future risks associated with issues such as pollution or poor governance. ESG-conscious investors may avoid companies with low ESG scores. We then hypothesised:

H5. A high ESG Score has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to the GRI Standards.

Board size. This variable and the next four examine corporate governance features and a firm's voluntary integrated report production. Numerous studies have focused on the problems of coordination among board members and agency issues with firm management due to the number of directors (Fiori et al., 2016; Izzo & Fiori, 2016). The significance of this corporate governance variable in voluntary disclosure is unclear (e.g., Pearce & Zahra, 1992; Dalton, Daily, Johnson, & Ellstrand, 1999, Prado-Lorenzo & Garcia- Sanchez, 2010). However, GRI's "understanding" and production, while satisfying complicated GRI principles and content, seem to suggest the framework and SASB Reports demand composite knowledge and experience. We propose the following hypothesis:

H6. The board size has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to the GRI Standards.

Non-executive board members. The literature acknowledges the importance of non-executive directors in managing managerial opportunism, defending capital provider interests, and ensuring Board of Directors independence (García Sánchez et al., 2011; Weir & Laing, 2003). Thus, this type of director assures the market and corporate shareholders. Thus, the unique function of non-executive directors affects voluntary disclosure quantity and quality (Fama & Jensen, 1983; Fiori et al., 2016). Non-executive directors may want company openness. GRI can cause a "quantum leap" in voluntary disclosure and information transparency by a company, and non-executive directors are generally responsible. Therefore, we assume that non-executive directors can encourage GRI-adhering enterprises to implement SASB Standards. We develop the following hypotheses:

H7. The presence of non-executive directors has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to the GRI Standards.

Independent board members. We will test independent board members alongside non-executive members in this study. In corporate governance, an independent board member is a director who is not part of a company's executive team or daily operations. We think independent board members can help corporations disclose more transparently. The literature on earnings management suggests that additional independent board members will dramatically reduce earnings management

and improve disclosure quality (Bar-Yosef & Prencipe, 2009). Thus, firms that have already adopted GRI Standards may embrace SASB Standards due to independent directors. We then hypothesised:

H8. The presence of independent directors has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to the GRI Standards.

Gender diversity. Corporate governance features like gender diversity may affect integrated report creation. Due to their greater sustainability and reputational awareness, some studies suggest that non-financial disclosure of women on boards of directors is relevant (Barako & Brown, 2008; Prado-Lorenzo & Garcia-Sanchez, 2010; Bear, Rahman, & Post, 2010). Given GRI and SASB's positive impact on openness within companies and their boards, it seems worthwhile exploring the relationship between gender diversity and this new external reporting. The hypothesis is:

H9. Gender diversity has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to the GRI Standards.

Specific skills diversity. The percentage of board members with industrial or financial experience was also intriguing. We sought to see if the decision to adopt SASB Standards by GRI-compliant organisations is correlated with skill diversity. No other prior study was found to justify this relationship, which must be explored. The use of GRI and SASB standards require specific skills and competencies, thus, a synergetic effect of the use of both could be justified by the existence of experienced and diverse members on the board of directors. Accordingly:

H10. Specific skills diversity has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to the GRI Standards.

GDP per capita. GDP per capita is the natural logarithm of a country's GDP to population. Macroeconomic factors like GDP and GDP per capita affect GI, according to Eyraud et al. (2013). Their findings imply that green investments rise with GDP per capita (GI). Our study examines if GRI and SASB have the same relationship. We propose the following hypothesis:

H11. A country's GDP per capita has a positive association with the voluntary adoption of SASB Standards by firms that have adhered to the GRI Standards.

b) Model

The binary logistic regression model analyses the relationship between company and country variables and voluntary SASB Standards adoption by enterprises currently utilising GRI Standards, which may influence this adoption. The baseline of this model has been extensively used in studies on voluntary IR adoption (Frías-Aceituno et al., 2013a, 2013b, 2014; Girella et al., 2019; Jensen and Berg, 2012). Equation 1 represents the binary logit model for the current research objectives:

$$Prob\,(IR\&SASB = 1)_I = a_0 + \beta 1 SIZE_i + \beta 2 PROFITABILITY_i + \beta 3 LEVERAGE_i + \beta 4 MTB_i + \beta 5 ESGSCORE_i + \beta 6 BOARDSIZE_i + \beta 7 INDEPDIRECT_i + \beta 8 NONEXDIRECT_i + \beta 9 GENDERDIVERSITY_i + \beta 10 SPECIFICSKILLS_i + \beta 11 GDPPERCAPITA_i + e, \quad (1)$$

where:

IR&SASB: 1 if firm that adopted IR choice of reporting, also voluntarily adopted SASB Standards, 0 otherwise; SIZE: natural logarithm of total asset;
PROFITABILITY: return on assets; LEVERAGE: debt to asset ratio; MTB: market to book ratio; ESGSCORE: ESG Score;
BOARDSIZE: number of directors in the board;
INDEPDIRECT: percentage of independent directors on the board; NONEXDIRECT: percentage of nonexecutive directors on the board; GENDERDIVERSITY: percentage of women on the board;
SPECIFICSKILLS: percentage of board members who have an industry specific background or a strong financial background;
GDPPERCAPITA: natural logarithm of each country's GDP per capita.

The dependent variable is 1 if the company implemented SASB Standards and 0 otherwise for GRI Standards reporting. Test independent variables as determinants. Thus, SIZE is the logarithm of total assets and PROFIT is the return on assets. These approaches for quantifying size and profitability were chosen based on prior IR studies (Frías-Aceituno et al., 2013a, 2013b, 2014; Lai et al., 2016). Lai et al. (2016) measure leverage by debt-to-asset ratio. Growth Opportunities = market-to-book ratio (i.e., Frias- Aceituno et al., 2014). The ESG Score, collected from EIKON, quantifies an organization's environmental, social, and governance activities. The number of directors, the percentage of independent directors, the percentage of non-executive directors, the percentage of board members with an industry-specific background or a strong financial background, and the percentage of women on the board measure board size, specific skills, and gender diversity (Frias-Aceituno et al., 2013b). The logarithm of each country's GDP per capita measures GDP per capita. The independent factors' coefficients should be significant to explain the sustainability reporting standards decision. The coefficient sign indicates the likelihood's positive or negative influence.

c) Sample

As of July 29, 2022, EIKON Database reported that 8538 of 10197 firm-year observations between 2019 and 2021 embraced the GRI Standards and 1659 the SASB Standards. This study examines GRI and SASB Standard voluntary adoption in detail. Thus, it will examine the impact of firm-specific and country-specific variables, answering earlier calls for this combination (Girella et al., 2019; Jensen & Berg, 2012). From this sample, we excluded firm-year observations where we couldn't get enough data for our analysis. Because of mandated IR disclosure in South Africa, organisations were also disbanded. We deleted a possible outlier firm-year observation after a Cooks Distance analysis. Between 2019 and 2021, 8,247 firm-year observations were made worldwide, with 6,856 adopting the GRI Standards and 1,391 the SASB Standards. Firm-specific data was collected from EIKON in 2022, while country-specific data was collected from World Development Indicators on June 30, 2022.

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4. RESULTS

The independent sample t-test of the independent variables for enterprises who voluntarily embraced both GRI and SASB Standards (GRI&SASB = 1) and firms that only implemented GRI is shown in Table 1. The null hypothesis of equal mean values between groups can be rejected except for PROFITABILITY. Given the p-values below 0.05, the sample strongly suggests that the two population means (GRI&SASB=0 or GRI&SASB=1) are not similar in SIZE, LEVERAGE, ESGSCORE, BOARDSIZE, NONEXDIRECT, INDEPDIRECT, GENDERDIVERSITY, SPECIFICSKILLS, and GDPPERCAPITA. To reject the MTB equality null, the confidence interval drops from 95% to 90%. Other descriptives and correlations are not included but can be requested from the authors.

Table 1 Independent sample t-test

	Mean		Mean difference (1-0)	p-value
	GRI&SASB=0	GRI&SASB=1		
SIZE	15.68	16.71	1.025	0.000
PROFITABILITY	0.05	0.05	0.004	0.143
LEVERAGE	0.29	0.32	0.029	0.000
MTB	2.10	4.33	2.228	0.076
ESGSCORE	0.60	0.69	0.088	0.000
BOARDSIZE	10.10	11.04	0.933	0.000
NONEXDIRECT	0.79	0.84	0.046	0.000
INDEPDIRECT	0.56	0.77	0.216	0.000
GENDERDIVERSITY	0.15	0.18	0.031	0.000
SPECIFICSKILLS	0.42	0.51	0.091	0.000
GDPPERCAPITA	10.34	10.84	0.493	0.000

Table 2 shows logistic regression results. Since we are investigating a logistic regression model, we do not need to evaluate regression standardised residual, collinearity statistics, or sample autocorrelation. A Nagelkeerk R Square of 0.308 indicates that the factors explain 30.8% of the result variance. Table 2 also shows the findings if the Equation with the original model is extended to include controls for all industries (Sic codes) and geographies (continents), including binary variables (coded as 0 or 1). Nagelkeerk R Square rises to 0.314. After adding these variables, statistical significance remains.

Firm size. Firm size has a substantial positive variation ($\beta = 0.260$; $p = 0.000$). According to earlier studies (Frías-Aceituno et al., 2013a, 2013b, 2014; Girella et al., 2019), firm size has a beneficial impact. The result supports agency theory, signaling theory, stakeholder theory, and theory of proprietary costs, which most previous studies have used to conclude that company size positively affects voluntary disclosure because the larger the firm, the more likely it is to rely on external funds and the more stakeholders it must satisfy. Thus, as compared with the smallest, biggest companies are more prone to use SASB standards because they have more resources, but preparing such reports is costly (property cost theory), and they must justify the use of resources to those who trust them (agency theory); furthermore, they are more scrutinized over the world (stakeholder theory), which justifies the disclosure of credible information about itself (signaling theory). Hypothesis H1 stands.

Profitability. The variable Profitability is significant and positive ($\beta = 1.147$; $p = 0.002$). This result aligns with Frías-Aceituno et al. (2013a, 2013b, 2014), García-Sánchez et al. (2013), and Girella et al (2019). Firms with bigger industry profits often draw more stakeholder attention in the sense that this group includes not only the investors but consumers, clients, suppliers, among others, who are interested in identifying is good profitability is supported in good management and sustainability practices. The choice of GRI and SASB Standards may help them pass distinct constituency exams. Thus, increasing profitability increases the likelihood that the firm will provide non-mandatory information like GRI or SASB Standards. The signaling theory suggests that more lucrative organisations may want to announce their strong performance to interested parties. Hypothesis H2 remains.

Table 2 Logistic regression

	Logit model			Logit model, controls for industry and geography		
	β	S.E.	p-value	β	S.E.	p-value
Constant	-15.92	0.819	0.000	-14.900	1.109	0.000

SIZE	0.260	0.024	0.000	0.274	0.025	0.000
PROFITABILITY	1.147	0.377	0.002	1.082	0.382	0.005
LEVERAGE	0.790	0.184	0.000	0.771	0.187	0.000
MTB	0.001	0.001	0.216	0.002	0.001	0.202
ESGSCORE	1.952	0.258	0.000	1.972	0.263	0.000
BOARDSIZE	0.075	0.012	0.000	0.069	0.013	0.000
NONEXDIRECT	-1.386	0.317	0.000	-1.379	0.321	0.000
INDEPDIRECT	3.799	0.244	0.000	3.667	0.246	0.000
GENDERDIVERSITY	0.342	0.246	0.164	0.348	0.249	0.164
SPECIFICSKILLS	1.735	0.180	0.000	1.678	0.182	0.000
GDPPERCAPITA	0.511	0.071	0.000	0.494	0.071	0.001
Industry dummies		-			Included	
Geography dummies		-			Included	
Nagelkerke R Square		0.308			0.314	

Leverage. Positive and significant (β = 0.790; p = 0.000). In accordance with Eng & Mak (2003) and Barnea & Rubin (2010). According to agency and stakeholders' theory, debtors and other stakeholders pay more attention to organisations with stronger leverage, therefore managers disclose better data (financial and nonfinancial). Hypothesis H3 remains.

Market-to-book ratio. While positively associated with voluntary SASB Standards adoption by IR enterprises, lacks statistical significance (β = 0.001; p = 0.216). This supports Frias-Aceituno et al. (2014) and García-Sánchez et al. (2013) findings that firms adhering to GRI Standards adopt SASB Standards without being influenced by their market-to-book ratio. Hypothesis H4 fails.

ESG Score. Positive and significant (β = 1.952; p = 0.000). Thus, companies with better ESG Scores are more likely to freely embrace SASB Standards if they already follow GRI Standards. Companies know stakeholders are increasingly concerned about ESG and may be turned off by a low ESG score. Hypothesis H5 remains.

Board size. Positive and significant (β = 0.075; p = 0.000). Frias-Aceituno et al. (2013b) and Girella et al. (2019) find that large boards allow for diverse knowledge and understanding of financial and sustainability information, leading to voluntary adoption of SASB Standards if already adhering to GRI Standards. Npo rejection of Hypothesis H6.

Non-executive board members. Significant negative effect (β = -1.386; p = 0.000). The presence of non-executive directors negatively impacts the voluntary adoption of SASB Standards by GRI Standards-compliant enterprises. Therefore, while we compute that non-executive directors may want to boost the company's openness, it's irrelevant to our thesis that their existence helps GRI-accredited companies adopt SASB Standards. This contradicts earlier research. Hypothesis H7 fails.

Independent board members. Positive and significant (β = 3.799; p = 0.000). Thus, independent board members may help corporations disclose more transparently. This suggests that GRI-compliant organisations are more likely to implement SASB Standards. No rejection of H8.

Gender diversity. Positive but not significant (β = 0.342; p = 0.164). This suggests that women on boards do not help corporations prioritise sustainable information, which contradicts Frias-Aceituno et al. (2013b) and supports Girella et al (2019). Hypothesis H9 fails.

Specific skills diversity. Positive and significant (β = 1.735; p = 0.000). Diverse capabilities in firms benefit from SASB adoption by GRI-compliant companies. No rejection of H10.

GDP per capita. Positive and significant (β = 0.511; p = 0.000). Eyraud et al. (2013) found that GDP per capita increases green investments (GI). The study found that sustainable information attention increases with GDP per capita. Hypothesis H11 stands.

5. CONCLUSION

This study examined the impact of firm-specific (and country-specific) variables on GRI-adhering firms' voluntary adoption of SASB Standards. This study answers previous GRI and SASB research questions about corporate and institutional characteristics. It also showed that combining multiple theories can be a useful solution for future investigations. Indeed, a single hypothesis may limit results. This study contributes to the current "wake-up call" that standard financial reporting is no longer sufficient to operate the business and assist stakeholder decision-making (Lev & Gu, 2016).

Firm size, profitability, leverage, ESG score, board size, independent directors, and specialised abilities have been found to influence voluntary adoption of the SASB Standards in GRI-published enterprises. Firms who followed the IR are more likely to voluntary adopt SASB Standards in nations with higher GDP per capita. The majority of the study results support the theories that explain why organisations voluntarily implement GRI and SASB Standards, as they are complementary standards and cover different aspects of sustainability performance that provide stakeholder value.

As other research, this one is not free from bias, especially because data selection (ie, only firms preparing IR) or the existence of other variables that could be used as determinants (ie, type of auditors, existence of assurance of IR). These limitations could be sources of inspiration to develop future works, together with the comparison of the results splitting the sample into different legal or accounting regimes.

6. REFERENCES

Adams, C., & Frost, G. (2008). Integrated sustainability reporting into management practices. Accounting Forum, 32(3), 288-302.

Baiman, S., & Verrecchia, R. E. (1996). The relation among capital markets, financial disclosure, production efficiency, and insider trading. Journal of Accounting Research, 34(1), 1–22. https://doi.org/10.2307/2491329

Ball, R., & Foster, G. (1982). Corporate financial reporting: A methodological review of empirical research. Journal of Accounting Research, 20, 161–234. https://www.jstor.org/stable/2674681

Bar-Yosef, S., & Prencipe, A. (2009). Earnings management and corporate governance in family-controlled companies. SSRN. https://doi.org/10.2139/ssrn.1367543

Barako, D. G., & Brown, A. M. (2008). Corporate social reporting and board representation: evidence from the Kenyan banking sector. Journal of Management and Governance, 12(4), 309–324. https://doi.org/10.1007/s10997-008-9053-x

Barnea, A., & Rubin, A. (2010). Corporate social responsibility as a conflict between shareholders. Journal of Business Ethics, 97(1), 71–86. https://doi.org/10.1007/s10551-010-0496-z

Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. Journal of Business Ethics, 97(2), 207–221. https://doi.org/10.1007/s10551-010-0505-2

Berle, A. A., & Means, G. C. (1932). The modern corporation and private property. New Brunswick. NJ: Transaction

Boiral, O., Iñaki Saizarbitoria, H., & Brotherton, M. (2019). Assessing and improving the quality of sustainability reports: The auditors' perspective. Journal of Business Ethics, 155, 703-721.

Campbell, D., Shrives, P., & Bohmbach-Saager, H. (2001). Voluntary disclosure of mission statements in corporate annual reports: Signaling what and to whom? Business and Society Review, 106(1), 65–87. https://doi.org/10.1111/0045-3609.00102

Chow, C. W., & Wong-Boren, A. (1987). Voluntary financial disclosure by Mexican corporations. The Accounting Review, 62(3), 533–541.

Cooke, T. E. (1991). An assessment of voluntary disclosure in the annual reports of Japanese corporations. The International Journal of Accounting, 26(3), 174–189.

Cooke, T. E. (1992). The impact of size, stock market listing and industry type on disclosure in the annual reports of Japanese listed corporations. Accounting and Business Research, 22(87), 229–237. https://doi.org/10.1080/00014788.1992.9729440

Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. Academy of Management Journal, 42(6), 674–686. https://doi.org/10.5465/256988

Daub, Claus-Heinrich. (2007). Assessing the quality of sustainability reporting: An alternative methodological approach. Journal of Cleaner Production, 15, 75-85.

De Villiers, C., & Dimes, R. (2022). Will the formation of the International Sustainability Standards Board result in the death of Integrated Reporting? Journal of Accounting & Organizational Change, forthcoming. DOI: 10.1108/JAOC-05-2022-0084

Deegan, C. (2020). The IR Framework. In C. De Villiers, P. K. Hsiao & W. Maroun (Eds.), The Routledge Handbook of Integrated Reporting (). Routledge

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48, 147–160. https://doi.org/10.2307/2095101

Eccles, G. (2001). The Value Reporting™ revolution: Moving beyond the earnings game.

Elliott, R. K., & Jacobson, P. D. (1994). Costs and benefits of business information. Accounting Horizons, 8(4), 80–96.

Eng, L. L., & Mak, Y. T. (2003). Corporate governance and voluntary disclosure. Journal of Accounting and Public Policy, 22(4), 325–345. https://doi.org/10.1016/S0278-4254(03)00037-1

Eyraud, L., Clements, B., and Wane, A. (2013), "Green investment: trends and determinants", Energy Policy, 60, 852-865.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. The Journal of Law and Economics, 26(2), 301–325. https://doi.org/10.1086/467037

Fernandez-Feijoo, B., Romero, S., and Ruiz, S. (2014). Effect of stakeholders' pressure on transparency of sustainability reports within the GRI framework. Journal of Business Ethics, 122, 53-63.

Fink, L. (2018). The purpose of finance. London Business School. https://www.london.edu/faculty-and-research/lbsr/future-of-finance/the-purpose-of-finance-larry-fink-investors-esg-metrics-2018-11?IR=T

Fiori, G., di Donato, F., & Izzo, M. F. (2016). Exploring the effects of corporate governance on voluntary disclosure: An explanatory study on the adoption of integrated report. In Performance measurement and management control: Contemporary issues (pp. 83–108). Emerald Group Publishing Limited. https://doi.org/10.1108/S1479-351220160000031003

Flower, J. (2020). The IIRC's journey: from sustainability to investor value. In C. De Villiers, P. K. Hsiao & W. Maroun (Eds.), The Routledge Handbook of Integrated Reporting. Routledge

Frankel, R., Johnson, M., & Skinner, D. J. (1999). An empirical examination of conference calls as a voluntary disclosure medium. Journal of Accounting Research, 37(1), 133–150. https://doi.org/10.2307/2491400

Freeman, R. E. (1984). Strategic management: A stakeholder approach. New York: Cambridge university press

Frías-Aceituno, J. V., Rodríguez-Ariza, L., & García-Sánchez, I. M. (2013a). Is integrated reporting determined by a country's legal system? An exploratory study. Journal of Cleaner Production, 44, 45–55. https://doi.org/10.1016/j.jclepro.2012.12.006

Frias-Aceituno, J. V., Rodriguez-Ariza, L., & Garcia-Sanchez, I. M. (2013b). The role of the board in the dissemination of integrated corporate social reporting. Corporate Social Responsibility and Environmental Management, 20(4), 219–233. https://doi.org/10.1002/csr.1294

Frias-Aceituno, J. V., Rodríguez-Ariza, L., & Garcia-Sánchez, I. M. (2014). Explanatory factors of integrated sustainability and financial reporting. Business Strategy and the Environment, 23(1), 56–72. https://doi.org/10.1002/bse.1765

García Sánchez, I. M., Rodríguez Domínguez, L., & Gallego Álvarez, I. (2011). Corporate governance and strategic information on the internet: A study of Spanish listed companies. Accounting, Auditing & Accountability Journal, 24(4), 471–501. https://doi.org/10.1108/09513571111133063

García-Sánchez, I. M., Rodríguez-Ariza, L., & Frías-Aceituno, J. V. (2013). The cultural system and integrated reporting. International Business Review, 22(5), 828–838. https://doi.org/10.1016/j.ibusrev.2013.01.007

Gaudencio, L., de Oliveira, R., Curi, W., Santana, C., Silva, J. & Meira, M. (2018). Oil and gas companies operating in Brazil adhere to GRI-G4 essential sustainability indicators. A critical review. In Environment, Development and Sustainability. vol 22

Girella L, Rossi P, Zambon S. (2019). Exploring the firm and country determinants of the voluntary adoption of integrated reporting. Bus Strat Env. 2019;28: 1323–1340. https://doi.org/10.1002/bse.2318

Granovetter, M. (2000). The economic sociology of firms and entrepreneurs. In R. Swedberg (Ed.), Entrepreneurship (pp. 244–275). Oxford: Oxford University Press

GRI (2017). Global Reporting Initiative: The importance of these standards. https://www.globalreporting.org/standards/standards-development/universal-standards/

Grossman, S. (1981). The role of warranties and private disclosure about product quality. Journal of Law and Economics, 24, 461-483. https://doi.org/10.1086/466995

Hossain, M., Perera, M. H. B., & Rahman, A. R. (1995). Voluntary disclosure in the annual reports of New Zealand companies. Journal of International Financial Management & Accounting, 6(1), 69–87. https://doi.org/10.1111/j.1467-646X.1995.tb00050.x

Huang, C. L., & Kung, F. H. (2010). Drivers of environmental disclosure and stakeholder expectation: Evidence from Taiwan. Journal of Business Ethics, 96(3), 435–451. https://doi.org/10.1007/s10551-010-0476-3

IFRS. (2022). Updates from IFRS Foundation and EFRAG: the role of integrated reporting and the IIRC. https://www.integratedreporting.org/news/updates-from-ifrs-foundationand-efrag-the-role-of-integrated-reporting-and-the-iirc/

Integrated Reporting. (2022). Integrated Reporting: About us. https://www.integratedreporting.org/the-iirc-2/

Izzo, M. F., & Fiori, G. (2016). The Influence of Corporate Governance on the Adoption of The Integrated Report: A first Study on IIRC Pilot Programme. In C. Mio (Ed.), Integrated reporting. London: Palgrave Macmillan. https://doi.org/10.1057/978-1-137-55149-8_9

Jackson, G., & Apostolakou, A. (2010). Corporate social responsibility in Western Europe: An institutional mirror or substitute? Journal of Business Ethics, 94, 371–394. https://doi.org/10.1007/s10551-009-0269-8.

Jayasiri, N. K., Kumarasinghe, S. & Pandey, R. (2022). 12 years of integrated reporting: A review of research. Accounting & Finance, 00, 1-57. Available from: https://doi.org/10.1111/acfi.12958

Jensen, J. C. & Berg, N. (2012). Determinants of traditional sustainability reporting versus integrated reporting. An institutionalist approach. Business Strategy and the Environment, 21(5), 299–316. https://doi.org/10.1002/bse.740

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

KPMG. (2017). KPMG The Road Ahead: KPMG Survey of Corporate Responsibility Reporting 2017. Zurich: KPMG

KPMG. (2024). Key global trends in sustainability reporting. https://kpmg.com/xx/en/our-insights/esg/survey-of-sustainability-reporting-2022/global-trends.html

Lemon, A. J., & Cahan, S. F. (1997). Environmental legislation and environmental disclosures: Some evidence from New Zealand. Asian Review of Accounting, 5(1), 78–105. https://doi.org/10.1108/eb060683

Lai, A., Melloni, G., & Stacchezzini, R. (2016). Corporate sustainable development: Is 'integrated reporting' a legitimation strategy? Business Strategy and the Environment, 25(3), 165–177. https://doi.org/10.1002/bse.1863

Lev, B., & Gu, F. (2016). The end of accounting and the path forward for investors and managers. John Wiley & Sons. https://doi.org/10.1002/9781119270041

Lin, Hank, Chang, O., & Chang, C. (2014). Importance of Sustainability Performance Indicators as Perceived by the Users and Preparers. Journal of Management and Sustainability 4: 29-41

Matten, D., & Moon, J. (2008). 'Implicit' and 'explicit' CSR: A conceptual framework for a comparative understanding of corporate social responsibility. Academy of Management Review, 33, 404–424. https://doi.org/10.5465/amr.2008.31193458

Meek, G. K., Roberts, C. B., & Gray, S. J. (1995). Factors influencing voluntary annual report disclosures by US, UK and continental European multinational corporations. Journal of International Business Studies, 26(3), 555–572. https://doi.org/10.1057/palgrave.jibs.8490186

Mervelskemper, L., & Streit, D. (2017). Enhancing market valuation of ESG performance: Is integrated reporting keeping its promise? Business Strategy and the Environment, 26(4), 536–549. https://doi.org/10.1002/bse.1935

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. American Journal of Sociology, 83(2), 340–363. https://doi.org/10.1086/226550

Milgrom, P. (1981). Good news and bad news: Representation theorems and applications. Bell Journal of Economics, 12, 380–391. https://doi.org/10.2307/3003562

Milne, M. J. (2002). Positive accounting theory, political costs and social disclosure analyses: A critical look. Critical Perspectives on Accounting, 13(3), 369–395. https://doi.org/10.1006/cpac.2001.0509

Morris, R. D. (1987). Signalling, agency theory and accounting policy choice. Accounting and Business Research, 18(69), 47–56. https://doi.org/10.1080/00014788.1987.9729347

Olsthoorn, X., Tyteca, D., Wehrmeyer, W., and Wagner M. (2001). Environmental indicators for business: A review of the literature and standardisation methods. Journal of Cleaner Production 9: 453-63.

Pearce, J. A., & Zahra, S. A. (1992). Board composition from a strategic contingency perspective. Journal of Management Studies, 29(4), 411–438. https://doi.org/10.1111/j.1467-6486.1992.tb00672.x

Phillips, R., Freeman, R. E., & Wicks, A. C. (2003). What stakeholder theory is not. Business Ethics Quarterly, 13(4), 479–502. https://doi.org/10.5840/beq200313434

Prado-Lorenzo, J. M., & Garcia-Sanchez, I. M. (2010). The role of the board of directors in disseminating relevant information on greenhouse gases. Journal of Business Ethics, 97(3), 391–424. https://doi.org/10.1007/s10551-010-0515-0

Ross, S. A. (1977). The determination of financial structure: The incentivesignalling approach. The Bell Journal of Economics, 8, 23-40. https://doi.org/10.2307/3003485

SASB (2021). An Introduction to SASB standards. https://www.sasb.org/about/

Schaltegger, Stefan, and Roger Burritt (2000). Contemporary Environmental Accounting. Sheffield: Greenleaf Publishing Limited.

Spence, M. (1978). Job market signalling. In Uncertainty in economics (pp. 281–306). Harvard: Academic Press. https://doi.org/10.1016/B978-0-12-214850-7.50025-5

Stubbs, W., & Higgins, C. (2018). Stakeholders' perspectives on the role of regulatory reform in integrated reporting. Journal of Business Ethics, 147(3), 489–508. https://doi.org/10.1007/s10551-015-2954-0

Tarquinio, Lara, Domenico Raucci, and Roberto Benedetti. 2018. An Investigation of Global Reporting Initiative Performance Indicators in Corporate Sustainability Reports: Greek, Italian and Spanish Evidence. Sustainability 10: 897.

VRF. (2021). Integrated Thinking Principles. https://www.valuereportingfoundation.org/resources/resources-overview/#integratedthinking-principles

Wagner Mainardes, E., Alves, H., & Raposo, M. (2011). Stakeholder theory: Issues to resolve. Management Decision, 49(2), 226–252. https://doi.org/10.1108/00251741111109133

Wallace, R. O., Naser, K., & Mora, A. (1994). The relationship between the comprehensiveness of corporate annual reports and firm characteristics in Spain. Accounting and Business Research, 25(97), 41–53. https://doi.org/10.1080/00014788.1994.9729927

Watson, A., Shrives, P., & Marston, C. (2002). Voluntary disclosure of accounting ratios in the UK. The British Accounting Review, 34(4), 289–313. https://doi.org/10.1006/bare.2002.0213

Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. Accounting Review, 53, 112–134.

WEF. (2022). Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation. https://www.weforum.org/stakeholdercapitalism

Whiting, R. H., & Miller, J. C. (2008). Voluntary disclosure of intellectual capital in New Zealand annual reports and the "hidden value". Journal of Human Resource Costing & Accounting, 12(1), 26–50. https://doi.org/10.1108/14013380810872725

Wilburn, K., & Wilburn, R. (2013). Using global reporting initiative indicators for CSR programs. Journal of Global Responsibility 4: 62-75

DECLARATION OF CONTRIBUTIONS TO THE ARTICLE

ROLE	Carvalho, A.R.	Lopes, A.I.
Conceptualization – Ideas; formulation or evolution of overarching research goals and aims.		x
Data curation – Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.	x	
Formal analysis – Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data.	x	x
Funding acquisition - Acquisition of the financial support for the project leading to this publication.		x
Investigation – Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.	x	x
Methodology – Development or design of methodology; creation of models.		x
Project administration – Management and coordination responsibility for the research activity planning and execution.		x
Resources – Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.		x
Software – Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.	x	x
Supervision – Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.		x
Validation – Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs.		x
Visualization – Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.	x	
Writing – original draft – Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation).	x	
Writing – review & editing – Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages.		x